

## CLAIMS

- 1    1. A food conveyor system for a food outlet wherein food servings on bases are  
2    conveyed on an automated conveying system, the conveying system having a  
3    customer conveyor section and a food service conveyor section, wherein the  
4    food service section includes an entry point; at least two food processing  
5    conveyor paths extending from said entry point, at least one of said food  
6    processing conveyor paths including a means for bringing food servings in said  
7    conveyor path to a desired temperature; a means for diverting food serving bases  
8    at the entry point to one of said conveyor paths; the conveyor paths rejoining  
9    each other at a food service section exit point which rejoins said customer  
10   section.
- 1    2. The food conveyor system of claim 1 wherein one of said food processing  
2    conveyor paths is a bypass conveyor, wherein food serving bases merely travel  
3    to the exit point.
- 1    3. The food conveyor system of claim 1 wherein one of said food processing  
2    conveyor paths is a heating path, the heating path including a means for heating  
3    food servings in said path.
- 1    4. The food conveyor system of claim 3 wherein said heating means comprises a  
2    conventional oven, a microwave oven, grill, steamer or fryer.
- 1    5. The food conveyor system of claim 1 wherein one of said food processing  
2    conveyor paths is a cooling path, the cooling path including a means for cooling  
3    food servings in said path.
- 1    6. The food conveyor system of claim 5 wherein said cooling means comprises a  
2    cooler.
- 1    7. The food conveyor system of claim 1 wherein a removal track extends from said  
2    entry point, the diverting means being actuatable to divert food servings to said  
3    removal track for removal of said food servings by staff.
- 1    8. The food conveyor system of claim 1 wherein each food processing path  
2    includes a buffer section for rejoining of food serving bases from these paths  
3    with the exit point.
- 1    9. The food conveyor system of claim 1 wherein each food serving base is  
2    individually electronically identifiable, the food processing section entry point  
3    having at least one sensor means for identifying each said food serving base, the

- 4 system including a means for deciding which of the food processing conveyor  
5 paths each food serving base is to be diverted to after identification of said food  
6 serving base and the type of food serving on said base, the deciding means  
7 operating the diverting means to divert each said food serving base accordingly.
- 1 10. The food conveyor system of claim 9 wherein the deciding means is a computer.
- 1 11. The food conveyor system of claim 10 wherein the exit point includes at least  
2 one sensor for identifying said food serving bases, the information regarding  
3 said food bases being relayed to said computer.
- 1 12. The food conveyor system of claim 10 wherein the customer section is divided  
2 into a number of customer stations, each customer station having at least one  
3 sensor, wherein, in use, information in relation to food serving bases taken by  
4 the customer from the conveyor are identified by said customer station sensor  
5 and relayed to said computer for billing purposes.
- 1 13. The food conveyor system of claim 12 wherein each customer station includes a  
2 customer screen, wherein, in use, food servings moving on the conveyor across  
3 the customer station are identified by said customer station sensor and the type  
4 and price of said food serving is displayed on the customer screen.
- 1 14. The food conveyor system of claim 13, wherein each customer screen includes  
2 option buttons for providing ordering, billing and other restaurant functions to  
3 the customer.
- 1 15. The food conveyor system of claim 14 wherein said computer is adapted to  
2 display predetermined information on said screen, said predetermined  
3 information selected from a group consisting of nutritional information,  
4 ingredients used and food background.
- 1 16. The food conveyor system of claim 10 further including a kitchen terminal  
2 located at the food service section of the conveyor system, the kitchen terminal  
3 having sensors, a screen and a keyboard, wherein, in use, information regarding  
4 food servings introduced to the conveyor can be entered into the computer via  
5 said kitchen terminal.
- 1 17. A food management and inventory system for a sushi train restaurant wherein  
2 food servings on bases are conveyed along a closed loop conveyor having a  
3 customer section and a food service section, the system characterised in that the  
4 bases are individually electronically identifiable.

- 1 18. The system of claim 17 wherein the bases have an electronically identifiable tag  
2 such as a barcode or radio frequency (RF) identification.
  - 1 19. The system of claim 17 wherein the system includes a computer, wherein  
2 information for each food serving introduced to the conveyor including the base  
3 identification number and the type of food serving in the base can be entered  
4 into the computer.
  - 1 20. The system of claim 17 wherein the system includes at least one sensor adjacent  
2 the conveyor, wherein the sensor can identify the food serving bases currently  
3 on the conveyor and said identity can be passed to the computer for performing  
4 an inventory on the type and quantity of food servings currently on the  
5 conveyor.
  - 1 21. The system of claim 17 wherein the system further includes at least one means  
2 for bringing food servings in said conveyor to a desired temperature and at least  
3 one sensor adapted to identify a base currently passing through said conveyor  
4 and to pass the identity of said base to the computer for identification of the food  
5 item on said base; said computer further adapted to
    - 6 (a) recall a predetermined preparation procedure for said food item;
    - 7 (b) direct said food item to a designated means for bring food servings in said  
8 conveyor to a desired temperature and applying a predetermined  
9 preparation program to process said food item; and
    - 10 (c) commanding conveyor to send said food item into said customer section.
  - 1 22. The system of claim 17 wherein the customer section is divided into a number  
2 of customer stations, wherein each customer station has at least one sensor,  
3 wherein the customer station sensor can detect and identify the food serving  
4 bases taken by the customer from the conveyor and the food serving information  
5 is passed to the computer for customer billing purposes.
  - 1 23. The system of claim 22 wherein each customer station has a customer screen for  
2 displaying information, wherein the food serving base moving across the  
3 customer station on the conveyor can be detected by the sensor, and wherein the  
4 food serving type and price can be displayed on the screen.
  - 1 24. The system of claim 23 wherein the type and price of all food servings taken by  
2 the customer can be displayed on the customer screen.

- 1    25.    The system of claim 23 wherein the customer's current bill total can be
- 2                 displayed on the customer screen.
- 1    26.    The system of claim 22 wherein the food serving information for all food
- 2                 servings consumed by all customers can be sent to the computer for a system
- 3                 inventory, for monitoring the type and amount of food servings being consumed.
- 1    27.    The system of claim 17 wherein the food service section includes an entry point;
- 2                 at least two food processing conveyor paths extending from said entry point, at
- 3                 least one of said food processing conveyor paths including a means for bringing
- 4                 food servings in the conveyor path to a desired temperature; a means for
- 5                 diverting food servings at the entry point to one of said conveyor paths; the
- 6                 conveyor paths rejoining each other at a food service section exit point which
- 7                 rejoins the conveyor customer section, wherein the food processing section entry
- 8                 point has at least one sensor for identifying each food serving base, the
- 9                 computer decides which of the food processing conveyor paths each food
- 10                 serving base is to be diverted to after identification of said food serving base,
- 11                 and the computer operates the diverting means to divert each said food serving
- 12                 base accordingly.
- 1    28.    The system of claim 27 wherein one of said food processing conveyor paths is a
- 2                 bypass conveyor where food servings merely travel to the exit point, wherein
- 3                 food servings which do not require bringing to a desired temperature can be
- 4                 diverted to the bypass section.
- 1    29.    The system of claim 27 wherein the time of introduction of each food serving
- 2                 base to the conveyor can be entered into the computer, wherein the computer
- 3                 can determine the exposure time for each particular food serving as being the
- 4                 time each food serving has been circulating in the conveyor for deciding which
- 5                 of the food processing paths each particular food serving is to be diverted.
- 1    30.    The system of claim 27 wherein one of said food processing conveyor paths is a
- 2                 bypass conveyor where food servings merely travel to the exit point, wherein
- 3                 food servings having a low exposure time can be diverted to the bypass section.
- 1    31.    The system of claim 27 wherein a removal track extends from said food
- 2                 processing section entry point, wherein food servings that have an exposure time
- 3                 higher than a predetermined time for that particular food serving are diverted to
- 4                 the removal track, for manual removal by staff.

- 1 32. The system of claim 27 wherein one of said food processing conveyor paths is a  
2 heating path, the heating path including a means for heating food servings in  
3 said path, wherein food servings that require reheating can be diverted to the  
4 heating path to bring the temperature of the food to the desired level.
  - 1 33. The system of claim 27 wherein one of said food processing conveyor paths is a  
2 cooling path, the cooling path including a means for cooling food servings in  
3 said path wherein food servings that require recooling can be diverted to the  
4 cooling path to bring the temperature of the food to the desired level.
  - 1 34. The system of claim 27 wherein the entry point sensor is used to identify the  
2 food servings in the conveyor, wherein the food serving information can be  
3 passed to the computer for performing an inventory on the types of food  
4 servings in the conveyor, the quantity of each food serving and which food  
5 serving are being depleted.
  - 1 35. The system of claim 23 wherein the customer screen includes option buttons  
2 which allows the customer to order specific food servings from the kitchen,  
3 wherein staff can then prepare the specific food serving and place same on the  
4 conveyor, and wherein when the specific food serving is approaching the  
5 customer, the customer will be alerted via their screen.
  - 1 36. The system of claim 35 wherein other customers can be alerted via their screens  
2 that the specific food serving is a special order and is not available to them.
  - 1 37. The system of claim 35 wherein when the customer takes the specific food  
2 serving from the conveyor, this information is passed to the computer for  
3 confirmation.
  - 1 38. A method of managing food supply and food inventory in a food outlet wherein  
2 food servings on bases are conveyed along an automated conveyor having a  
3 customer section and a food service section, wherein the bases are individually  
4 electronically identifiable, the method including the steps of:
    - 5 (a) entering information into a computer regarding each food serving  
6 introduced to the conveyor including the base identification number and  
7 the type of food serving on the base;
    - 8 (b) using at least one sensor at said food service section to identify all the  
9 bases currently on the conveyor; and

- (c) sending the information in relation to the bases currently on the conveyor to the computer for performing an inventory to determine the food servings currently on the conveyor and the food servings being depleted at the customer section.

The method of claim 38 further including the step of preparing food servings based on food servings being depleted and introducing said food servings to the conveyor.

The method of claim 38 further including the step of determining anticipated food serving demand using the computer based on history of food servings being depleted for a similar time of day/month/year, for informing staff on which food servings should be prepared in anticipation of such demands.

The method of claim 38 further including the step of entering the time of introduction of each food serving base to the computer such that the computer can determine the exposure time for each particular food serving as being the time each food serving has been circulating in the conveyor.

The method of claim 38 further including the step of removing food servings that have an exposure time higher than a predetermined time for that particular food serving.

The method of claim 38 further including the step of reheating or recooling food servings as required based on their exposure time and food type.

The method of claim 38 further including the step of advertising reheated/recooled food servings to customers at a reduced price.

The method of claim 38 wherein the customer section is divided into a number of customer stations, the method further including the step of using a sensor at each customer station to identify the food serving bases taken by the customer from the conveyor, and passing the food serving type and price for that base to the computer for billing and inventory.

An automated food handling system for food servings comprising

  - (a) a transfer means for transporting food servings therealong;
  - (b) a plurality of treatment modules coupled in parallel to said transfer means;
  - (c) means for sensing and recognizing the type of food servings being transported on said transfer means; and

- 6                     (d) means for automatically diverting said food serving from said transfer  
7                     means into one of said treatment modules.
- 1       47.          A system according to claim 46 wherein said transfer means includes a  
2                     conveyor system with a conveyor path.
- 1       48.          A system according to claim 46 wherein said treatment modules includes means  
2                     for bringing food servings in said conveyor path to a desired temperature.
- 1       49.          A system according to claim 46 wherein said means for automatically diverting  
2                     said food serving includes a plurality of diverging conveying path, each said  
3                     path leading to one of said treatment modules; and further includes an actuating  
4                     means for transferring a food serving to a designated treatment module.